

Application No. 10/716,190

Filed: November 18, 2003

TC Art Unit: 1732

Confirmation No.: 4133

TO THE CLAIMS

Please amend claim 1 as shown in the Summary of the Claims section, *infra*. No new matter has been added. Additions are underlined and deletions are struckthrough.

Claim 1 has been amended to make the subject matter of the claim more clear without narrowing the scope of the claim. Accordingly, such amendment is not claim narrowing and is made without the intention of surrendering any of the equivalents to which the original claim would have been entitled to but for the amendment.

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SUMMARY OF THE CLAIMS

Claim 1 (Currently amended). A method for controlling a thickness of a skin layer on a composite product having the skin layer and a core layer, comprising steps of:

(a) adding a carbon nanomaterial to at least one of either a first thermoplastic resin ~~under~~ a second thermoplastic resin, to cause or increase a difference in viscosity between those resins; and

(b) injection molding the first thermoplastic resin into a mold through a gate or hot runner using a first injection machine; and

(c) injection molding the second thermoplastic resin into the mold through said gate or hot runner using a second injection machine,

wherein said second thermoplastic resin is injected into said first thermoplastic resin so that the skin layer of said composite product contains said first thermoplastic resin and the core layer contains said second thermoplastic resin, and

~~both said resins into a mold~~

~~wherein the thickness of the skin layer is controlled by said difference in viscosity to produce said composite product having the skin layer containing said first thermoplastic resin and the core layer containing said second thermoplastic resin so as to control the thickness of the skin layer by said difference in viscosity,~~

~~wherein:~~

~~said first thermoplastic resin is firstly injected into the mold through a gate or hot runner by a first injection machine, and~~

-3-

Application No. 10/716,190

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~~subsequently said second thermoplastic resin is injected into said first thermoplastic resin in the same mold through said gate or hot runner by a second injection machine.~~

Claim 2 (Original). The method according to Claim 1, wherein said first resin and said second resin are same kind of resin.

Claim 3 (Original). The method according to Claim 1, wherein said first resin and said second resin are different kinds of resins.

Claim 4 (Previously presented). The method according to Claim 1, wherein adding the carbon nanomaterial to the first thermoplastic resin or to the second thermoplastic resin includes kneading said carbon nanomaterial and thermoplastic resin to provide better dispersion efficiency.

Claim 5 (Previously presented). The method according to Claim 1, wherein adding the carbon nanomaterial to the thermoplastic resins comprises adding the carbon nanomaterial in a range between about 1 and about 20 percent by mass.

Claim 6 (Previously presented). The method according to Claim 1, wherein adding the carbon nanomaterial comprises adding fullerene to a polypropylene resin to decrease the viscosity of the polypropylene resin.

Claim 7 (Previously presented). The method according to Claim 1, wherein the carbon nanomaterial is a carbon nanotube and the

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carbon nanotube has a particle length and a viscosity variation is controlled by controlling the particle length of the carbon nanotube.

Claim 8 (Previously presented). The method according to Claim 7, wherein the viscosity increases with increasing particle length of the carbon nanotube.

Claim 9 (Previously presented). The method according to Claim 1, wherein carbon nanomaterial is added to the second thermoplastic resin so that the viscosity of the second thermoplastic resin is made greater than the viscosity of the first thermoplastic resin and the skin layer of the first thermoplastic resin is pressed and stretched by the more viscous second thermoplastic resin layer to control its thickness.

Claim 10 (Previously presented). The method according to Claim 1, wherein carbon nanomaterial is added to the first thermoplastic resin so that the viscosity of the first thermoplastic resin is made less than the viscosity of the second thermoplastic resin and the skin layer of the first thermoplastic resin is pressed and stretched by the more viscous second thermoplastic resin layer to control its thickness.